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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* JOHN H. HOWARD

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Appeal 2009-000432  
Application 09/739,618  
Technology Center 2400

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Decided: September 21, 2009

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Before LEE E. BARRETT, JOSEPH L. DIXON,  
and ST. JOHN COURTENAY III, *Administrative Patent Judges*.

COURTENAY, *Administrative Patent Judge*.

DECISION ON APPEAL  
STATEMENT OF THE CASE

This is a decision on appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 2-10, 12-20, 22-27, and 29-35. Claims 1, 11, 21, 28, and 36-44 have been cancelled. We have jurisdiction under 35 U.S.C. § 6(b). We REVERSE.



## THE INVENTION

The disclosed invention is generally related to a network of computer systems. More particularly, Appellant's invention is directed to reliable storage in the network and efficient access to the storage by client computer systems. (Spec. 1).

Independent claim 2 is illustrative:

2. A storage comprising:

a non-volatile memory storing a first inode locating a first file in said storage and also storing a journal comprising a list of committed inodes; and

a block manager configured to copy said first inode to a second inode, wherein said block manager is configured to change said second inode in response to updates to said first file, and wherein said block manager is configured to atomically update said first file in response to a commit of said first file by writing said second inode to said non-volatile memory, whereby said second inode locates said first file in said storage, and wherein said block manager is configured to record said second inode in said journal.

## THE REFERENCES

The Examiner relies upon the following references as evidence:

Kozakura	US 5,724,581	Mar. 3, 1998
Fuller	US 5,870,757	Feb. 9, 1999
Zheng	US 6,571,259 B1	May 27, 2003



### THE REJECTIONS

1. The Examiner rejected claims 2, 3, 8, 12-15, 18, 22-23, 29-32, and 35 under 35 U.S.C. § 102(b) as anticipated by Kozakura.
2. The Examiner rejected claims 4, 5, 9, 10, 19, 20, 24, and 25 under 35 U.S.C. § 103(a) as unpatentable over the combination of Kozakura and Fuller.
3. The Examiner rejected claims 6, 7, 16, 17, 26, 27, 33, and 34 under 35 U.S.C. § 103(a) as unpatentable over the combination of Kozakura and Zheng.

### CONTENTIONS BY APPELLANT

Appellant contends, *inter alia*, that

Page tables locate physical pages stored in the memory system of the computer system, mapping logical pages used by the software to physical pages (see, e.g., Kozakura, col. 1, lines 32-28). Page tables that *map logical pages to physical pages in memory* have nothing to do with inodes that *locate files on a storage*. Page tables cannot anticipate inodes, as they are completely different and are used for different purposes. Additionally, logical and physical pages are fixed in size (see, e.g., Kozakura col. 1, line 34). Whereas files can have any size. Appellant notes that the standard for anticipation is one of fairly strict identity. Kozakura's page tables are significantly different from inodes, and cannot anticipate them.

(App. Br. 6-7, emphasis in original).



### EXAMINER'S RESPONSE

The Examiner disagrees:

However, the Examiner finds that the Applicant[']s arguments are not persuasive because Kozakura discloses, *"a current page table 2 is provided in the main storage unit and manages the position information in the data base storage unit concerning the latest physical page storing the latest updated data and the shadow physical page storing the data before the latest update"* (Kozakura, col.4, lines 41-45). Hence, Kozakura teaches of the current and shadow page tables (i.e., Applicant's inodes) storing the position information (i.e., Applicant's locating) of the physical data (i.e., Applicant's first file) in the data base storage unit (i.e., Applicant's storage).

(Ans. 13).

### REPLY BRIEF RESPONSE

In the Appeal Brief, Appellant noted that Kozakura's page tables cannot anticipate inodes, contrary to the assertion in the Final Office Action mailed March 21, 2007 ("Office Action"). Page tables locate physical pages stored in the memory system of the computer system, mapping logical pages used by the software to physical pages (see, e.g., Kozakura, col. 1, lines 32-28). The Answer responds (Answer, page 13, first full paragraph), referring to Kozakura's current page table and shadow page table. However, the Answer fails to address the underlying fact that page tables and inodes are not the same thing. Accordingly, page tables, no matter how they are constructed or used, cannot anticipate inodes as recited in claim 2.

(Reply Br. 2, emphasis in original).



## ISSUE

Based upon our review of the administrative record, we have determined that the following issue is dispositive in this appeal:

Has Appellant shown the Examiner erred in finding that Kozakura discloses the claimed inodes, as recited in each of independent claims 2, 8, 12, 22, and 29?

## PRINCIPLES OF LAW

“Whether an invention is anticipated is a question of fact.” *Elan Pharmaceuticals, Inc. v. Mayo Foundation for Medical Educ. and Research*, 346 F.3d 1051, 1054 (Fed. Cir. 2003) (citing *Hoover Group, Inc. v. Custom Metalcraft, Inc.*, 66 F.3d 299, 302 (Fed. Cir. 1995)). In rejecting claims under 35 U.S.C. § 102, “[a] single prior art reference that discloses, either expressly or inherently, each limitation of a claim invalidates that claim by anticipation.” *Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1375-76 (Fed. Cir. 2005) (citation omitted).

Appellant has the burden on appeal to the Board to demonstrate error in the Examiner’s position. *See In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006). Therefore, we look to Appellant’s Briefs to show error in the proffered prima facie case.

## FINDINGS OF FACTS

### *Appellant’s Specification*

1. The inode for the file (which is identified by the Inumber and indicates one or more blocks storing the file data) may be copied to a working copy of the inode, and the working copy may be updated to indicate the newly allocated blocks. (Spec. 2, ll. 7-10).



2. In one embodiment, the file ID is an inode number identifying an inode corresponding to the file. The inode includes pointers (directly or indirectly) to each block storing the file data. The inode may also include various file attributes, as desired. (Spec. 10, ll. 11-14).

*The Kozakura reference*

3. Kozakura discloses:

In a logical configuration, a data base has a plurality of fixed-length logical pages. Data on each of the logical pages are actually stored on physical pages generally referred to as blocks or slots of physical storage media. The physical pages are the same size as the logical pages. Therefore, a page table (page mapping table) is provided to indicate the correspondence (mapping information) between them.

(Col. 1, ll. 32-38).

ANALYSIS

Independent claims 2, 8, 12, 22, and 29

We consider the Examiner's rejection of independent claims 2, 8, 12, 22, and 29 as being anticipated by Kozakura.

After considering the evidence before us, and the respective arguments on both sides, we find the Kozakura reference falls short of anticipating Appellant's claimed invention for essentially the same reasons argued by Appellant in the Briefs. In particular, we find the Examiner is incorrectly and unreasonably reading the claimed "inodes" on Kozakura's page tables, for the reasons discussed *infra*. (See Ans. 13).



We begin our analysis by broadly but reasonably construing the disputed claim term “inode.” During prosecution, “the PTO gives claims their ‘broadest reasonable interpretation.’” *In re Bigio*, 381 F.3d 1320, 1324 (Fed. Cir. 2004) (quoting *In re Hyatt*, 211 F.3d 1367, 1372 (Fed. Cir. 2000)). “[T]he words of a claim ‘are generally given their ordinary and customary meaning.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal citations omitted). “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Id.* at 1313.

When we refer to Appellant’s disclosure for *context*, we find Appellant’s use the claim term “inode” is fully consistent with the ordinary and customary meaning of that term at the time of the invention (*See* FF 1-2). In particular, Appellant describes an “inode” as follows: “[t]he inode includes pointers (directly or indirectly) to each block storing the file data. The inode may also include various file attributes, as desired.” (FF 2). *Cf.* *W. Richard Stevens*, “Advanced Programming in the Unix® Environment”, Addison-Wesley, 1990, page 94 (“An i-node contains all the information about the file: the file type, the file’s access permission bits, the size of the file, pointers to the data blocks for the file, and so on.”). Therefore, we find the claim term “inode” is a recognized term of art in the context of the file system associated with Unix-based (and modern Linux-based) operating systems. We also find that a “page table” is a recognized term of art that is not the same as an “inode.”



We fully agree with Appellant that “[p]age tables that *map logical pages to physical pages in memory* have nothing to do with inodes that *locate files on a storage*. Page tables cannot anticipate inodes, as they are completely different and are used for different purposes.” (App. Br. 6-7, emphasis in original). Consistent with Appellant’s argument, we find Kozakura discloses that a page table is provided to indicate the correspondence (i.e., mapping information) between logical pages and physical pages stored on physical storage media. (FF 3). Cf. “IEEE 100 The Authoritative Dictionary of IEEE Standards Terms” Seventh Edition, IEEE Press, Dec. 2000, p. 789 (“page table A table that identifies the location of pages in storage and gives significant attributes of those pages.”).

Thus, we find the terms “inode” and “page table” are distinct, well-established terms of art, with an “inode” being directed to a low-level integral aspect of a file system, as described in Appellant’s Specification (FF 1-2; i.e., the inode includes pointers to each block storing the file data and may also include various file attributes).

Simply put, we find that a page table is not an inode.<sup>1</sup>

Therefore, we find the evidence before us clearly supports Appellant’s position as argued in the Briefs. “[A]bsence from the reference of any claimed element negates anticipation.” *Kloster Speedsteel AB v. Crucible*,

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<sup>1</sup> We need not reach the issue of whether a page table might suggest the functionality of an inode, because each independent claim before us on appeal is rejected under § 102.



*Inc.*, 793 F.2d 1565, 1571 (Fed. Cir. 1986). We note that each of independent claims 2, 8, 12, 22, and 29 recites the disputed term “inode.”

Accordingly we reverse the Examiner’s anticipation rejection of independent claims 2, 8, 12, 22, and 29, and associated dependent claims 3, 13-15, 18, 23, 30-32, and 35 that also stand rejected under § 102. Because we have reversed the Examiner’s rejection of each independent claim on appeal, we also reverse the Examiner’s rejections for each dependent claim rejected under § 103.

#### CONCLUSIONS

1. Appellant has established the Examiner erred in rejecting claims 2, 3, 8, 12-15, 18, 22-23, 29-32, and 35 under 35 U.S.C. § 102(b) for anticipation over Kozakura.
2. Appellant has established the Examiner erred in rejecting claims 4, 5, 9, 10, 19, 20, 24, and 25 under 35 U.S.C. § 103(a) as unpatentable over the combination of Kozakura and Fuller.
3. Appellant has established the Examiner erred in rejecting claims 6, 7, 16, 17, 26, 27, 33, and 34 under 35 U.S.C. § 103(a) as unpatentable over the combination of Kozakura and Zheng.

#### DECISION

We reverse the Examiner’s decision rejecting claims 2-10, 12-20, 22-27, and 29-35.

#### REVERSED



Appeal 2009-000432  
Application 09/739,618

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